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Yi 2
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(k)

On the sensible qualities of the air.

of the effects of Heat — p: 1
——————— of Cold — 32

We proceed next in the order of our ~~points~~ enumerate remote pre-
Syllabus to ~~enquire into~~ the various
=disposing -& exciting
causes which induce ~~the~~ disease, by their
separate, successive, or combined Actions
upon the human body. I shall not
attempt to point out the precise action
of any of them in inducing the different
links in the chain of Disease, inasmuch
as they act so differently according to this
number, force, and order and according
to the different States of predispositions in
the System.

~~As the Air we breathe is the most~~
~~fruitful source of disease, from its~~ I
I shall begin by taking notice of the
Sources of Disease from the Air. This is
a most important subject, & should

V Before I enter upon this subject it will be necessary to mention the limits of what are called heat and cold as applied to the atmosphere. In speaking of their positive effects they may be divided into hot - warm - temperate cool - and cold. Hot air exceeds 96 warm is between 96 and 75. temperate, between 75 and 65 - cool between 65 and 32. cold below 32 or the freezing point. These divisions do not apply to the relative effects of heat & cold, for we shall find that in the course of our inquiries that the sensation of the diseases of Cold may be induced by when the mercury is at 80 and 72, and that there are certain relative states of the system in which the air at 45° and 50° acts upon it with the usual powers of positive heat in a healthy state.

+ I reject here the effects of artificial heat. I spoke of those formerly when in treating upon animal heat

command your closest attention, inas=
=much as nearly all febrile diseases are
derived from its ~~no~~ peculiar qualities, &
~~there~~ is scarcely any other Disease that is
not influenced more or less by them.

The Air indues ~~indues~~ Diseases
in its simple
I by its sensible qualities, ~~These are~~
or natural state.
~~heat, cold, moisture and Dryness, rarity~~
~~and density~~. and
and extraneous
II by its insensible qualities.

I Of the Sensible Qualities of the Air,
in its simple State.

These are Heat, Cold, Moisture, Dryness,
Rarity and Density. I shall
positive and
first speak of the effects of each of them,
2dly of their relative effects
upon the human body.

I of the positive effects of ~~heat~~ Heat. The human
body is formed to exist in various Degrees

~~Air 60° below 65° and 32°, and below 32° Cold Air~~
~~= Doing to Farenheits Thermometer =~~

The freezing point
V_K may be to some of them, what 100°: may
be to Others, and
to 65°
what 62°; ~~and so to the~~ are
the human body in middle life.

~~* In speaking of the effects of heat therefore,~~
you will recollect always that I mean
~~the Air heated~~ about 80°. -

of temperature ~~of~~ the air, yet ~~there~~ are certain
degrees of it which are most favourable
to health ~~and life~~. Those degrees are different
in different periods of life. From 62° to
65° ~~are most salubrious~~ are most agreeable &
salutary in middle life. After the ~~50th~~ 45th
or 50 year of life, higher degrees of heat
become necessary to health and Comfort.
There are ~~no~~ the same limits ~~range~~ in the natural &
~~whose~~ ~~over the heat of the Atmosphere~~ ex-
healthy effects of heat upon other animals. ~~The~~
~~freezing point~~, ~~a~~ ~~may be to 100° of Heat~~
~~agreeable, it~~ I need not take pains to
prove in this place, that heat ~~to a certain~~
Air ~~to a certain~~ produces
~~Degree~~, ~~those healthy and~~ agreeable sensations
by its stimulating qualities. Whenever
the heat of the Atmosphere exceeds those
Degrees which are agreeable, it ~~so~~ produces
according to its grades - elevated excitement,

5 exitability - (without disorder)
debility from action, depression - disease,
oppression - prostration and death. All
of heat
these effects are influenced as I shall say
presently by habit. I shall now mention
positive
its effects upon different parts of the body.

Upon the arterial system it induces de-
-pression - excitability, and an aptitude to
be affected by all the causes which produce
fever. Sir Robert Wilson says the intense
heat in Egypt brought on a great difficulty
of breathing and hæmorrhages from the
lungs in the soldiers of the British army
in the Campaign of 17. The heat in these
cases was 116°:
2 Heat disposes to, in the degrees which are
stimulating beyond what is agreeable, produces
inducing in them a morbid
excitability in the nerves Disposing them
Sensibility and
to be acted upon by the highest impressions.
hence the frequency of Syncope & Hysteria in

V [illegible] It likewise produces an indisposition to all Voluntary motion.

V Dr Pinkard takes notice of a singular effect of heat produced by the [illegible] of the West Indies with respect to sleep. He says no Drowsiness ever follows it in the morning. Hence to "awake" and to "rise" are one thing in that part of the World.

‡ The morbid Affections thus induced by a stroke of the Sun are phrenitis, mania - Vertigo, Apoplexy - palsy & head ach - according to the force of the sun or the predisposition of the patient.

warm seasons & Countries.

3 It encreases the irritability of the muscles, thereby predisposing them to tetanus and Other Convulsive Diseases. V

4 It affects the brain with sleepiness in the ~~in~~ day time and Wakefulness in the night. V ~~Heat~~ ~~warm or hot air~~ affects sometimes suddenly the System by means of what is called Insolation, or a stroke of the sun. This effect of heat is confined chiefly to Climates alternately hot and cold. In England in the year 1705 many people and even horses and Oxen perished in the field from that Disease. In China 11,000 persons were destroyed by it between the 14th and 25th of July & in the year 1743. Travellers inform us that it is unknown in Africa ~~from~~ ~~Africa~~ where the heat is uniform, ~~is~~ owing to the Uniformity of the heat ~~for~~ ~~as the Disease is unknown~~.

V 6. The Senses are affected in a peculiar manner by heat. ~~a hyperbole of hot atmosphere~~. It first enervates the sense of touch by the moisture it induces on the Skin, & after a while dulls it. ~~It disposes to Opthalmia, Gutta Serena, and Cataract, hence the frequency~~ in past of those diseases in Egypt. Sir Robert Wilson says it produced false vision in the soldiers in the British Army in that country. They imagined they saw Camels horses, and Other Animals moving before them. It ~~dos~~ weakens the Senses of taste and smell, probably by dispipating, or alter-ing the ~~the~~ Quality of the fluids which covers the tongue & the membrane of the nose. It is to remedy the weakness of the Sense of ~~taste~~ smell that Spices are so much resorted to in Diet by the inhabitants of hot Countries. It affects the sense of hearing. A Frenchman in this city lost his ear for music, and

5th Heat affects the mind at first with
Sprightliness. This is taken notice of by Dr
Pinkard in his notes upon Barbadoes.
It afterwards produces irascibility,
and a disposition to madness, and finally
a Defect of weakness of intellect and
languor in every kind of mental exertion.

6th Heat acts upon the Liver producing an
increase in the Secretion and excretion of
Bile. This has often been remarked by
Butchers in the Cattle they kill in the sum-
=mer Months. It likewise increases
the Acrimony of the bile - Hence it Coyne
=times & irritates the rectum in passing
out of the bowels. The most Distressing chronic
Diseases of warm Climates arise from
excessive or vitiated bile. It further
Disposes to Inflammations & Obstructions
of the liver.

his touch for a musical Cord by a stroke of the Sun.

~~I. Hunt Data repeat~~

11 The same Bubos & Carbuncles do not attend the yellow fever in the West Indies only because that Disease affects Europeans & Americans in whom the fluids from habit have a centripetal determination. That induces what are called freckles. Those, tho' suddenly induced often last for life.

8 Upon the stomach ~~blood~~ heat ~~a virulent shot~~ acts firstly inducing according to Dr Clark an expired appetite, and afterwards a weakness of it more especially for animal food. In the bowels it ~~produces~~ Disposes to Colera, Diarr-hoea & Dysentery. V

9 It ~~Blood~~ acts in various ways upon the Skin. By imparting to ~~To give~~ R the blood a centrifu-gal direction it disposes to eruptions of all kinds from the boils and Carbun-cles which occur in the plague R down in Eastern countries to the opere and prickly heat which ~~ap-~~ occurs in sickly seasons in the west Indies. VI It often covers the faces of Children with little ~~bla~~ boils in Summer in the Middle States of America. It produces copious Discharges ~~from~~ of Sweat. This

V The quantity of perspiration discharged
in warm climates is greater than in
Cold. ~~Consequently~~. ~~It is said~~ Women cease
to menstruate from this cause in hot ~~Countries~~
~~ties~~ sooner than in Cold Countries. It is
from this copious Discharge ~~Determination~~ of the
watery part of the blood thro' the Skin,
that the Urine ~~becomes~~ Deposits a sediment,
or is encreased in its quantity in the
crisis of a fever. in the West Indies. This
is taken notice of Dr Hillary. ~~It has the first~~
In Consequence
~~Upon this~~ of the encrease of perspiration
by means of heat, there is always a diminution
of the Secretion of Urine. ~~This is obvious~~ in
persons who enjoy good health. It is from
~~remarkable fever~~ the facility with which Re-
a turn ~~upon off morbid~~ discharges obviates

Discharges are sometimes cold in the East Indies. In some cases it produces an uncommon Dryness upon the Skin. This effect of heat generally ushers in the Hepatitis of that Country. ~~In~~ when this Dry Skin occurs in hot weather in our Country, it is ~~by~~ generally followed ~~by sickness of some kind.~~ an inability to Labour, ~~and~~ or by Sickness of some kind! The perspiration & sweats discharged in Summer are of a saline & acrid nature. The former may be tasted upon the backs of the hands, and it is from the aeriony acquired by the perspiration by means of heat, that Catarrhs ~~contracted~~ which are induced by the perspiration thrown upon the

V Even the Urine in hot weather contracts
a preternatural acrimony, so as to induce
a n alcrimony scalding when it is discharged.
Wm Taylor Surg 1811.

= Herself by perspiration that febrile dis=
=eases are induced by a sudden encrease of
heat than of Cold. It is from the greater
perspiration which takes place in warm
than cold Countries, that gout & stone
are less common in the former than
in the latter.

by means of Cold, 10
lungs are so much more Disposing,
and dangerous than Catarrhs contracted
from the same Cause in Winter. V This
occur
probable bowel complaints are obstruc
in Summer than in Winter from
Obstructed perspiration; in consequence
of the greater discharge of that
when thrown upon the bowels. warm
Hot Air
discharges the white from the Skin, and
imparts to it a brown or
dark Color. ~~This brown or dark color~~
~~is occasioned by from the heat of the~~
Sun. The fairer the Skin, the up Dis=
=posed persons are to have it changed by
the Sun. Perhaps light, should be con=
=sidered as the cause of this brown, or
rather
Dark Color than heat. It is certain
the heat of a fire has no such effect,

V For a particular Account of the operation
of all those causes in producing not only the
black Color of the negroes, but all the peculiari-
-ties in the structure of their bodies & the faculties
of the mind, I refer you Gentlemen to Dr.
Smith's inquiry into the Variety of the Color
& figure in the human Species, and to a
small tract upon the same subject by
Dr Williamson of New York, in which the
Origin of the human race from a single
pair is proved, and all the objections
to it by infidel writers refuted in the most
satisfactory and scientific manner. Those
publications do honor to the intellectual
as well as to the moral Character of our
Country. While heat in time disposes the Skin to
assume a black Color - more time, or a
succession of Generations disposes it to resume
its Native White or flesh Color. This is proved
by Dr Williamson.

who are constantly exposed to it
for Smiths & Cooks have as fair skins as
other people. The Color of the Blacks has
been ascribed to the rays of the Sun. It
is certainly one of its causes, but Diet,
Diseases, and a savage or barbarous State of Society
to produce it. There is
no perceptible difference between the
Color of White and black Children in
the West Indies Until eight days after
birth, except in the Scrotum & Glans
penis which at birth are of a dark
~~The influence of heat combined with~~
Color. ~~Heat~~
~~Climate & Food~~ invigorates the Venereal Appetite.
Hence the early marriages of females, and the
late fruitfulness among males in hot
climates. Count Struensee who lost
his life for treason against the Queen

V This has lately been proved by Dr Siander.
Of 201 women who were delivered in the
lying in hospital at Gottingen the Dr says.
11 became pregnant in January
17 in Feb:
30 in March
17 in April
28 in May
22 in June
25 in July
16 in August
10 in Sept.
9 in Octob:
8 in Nov.
8 in Decem.

From this Acct we see the
influence of heat upon the
venereal appetite,
for Conception
in a greater number of instances
took place in the Spring
and Summer months, than
in the Winter & Autumn in
the ratio of 138 to 63.
The cases of Conception
were most numerous
in March & May.

King of Denmark says in his Confessions
that he had formed a design to settle in
the East Indies that he might enjoy
in a higher degree this Animal Grati=
=fication. The effects of heat upon the Ve=
=nereal appetite in middle latitudes is
appears in the greater number of births
which occur in the Winter and in consequence of Conception taking place in
than in any other Season of the year
the Vernal months. V
Dr Boerhaave supposes from these facts,
that longevity is connected with cold wea=
=ther, but if more persons have lived to
old old who were born in Cold Winter, than
I would rather
in other Seasons ascribe
to the greater number of births in that
Season, than in any other. In yielding

p. 12 1 to say

It is a common thing, the cold water acts as a
Sedative in these cases. But this is incorrect
language. The cold water has no action. It is
a nonentity - a nothing. The diminution of
heat, and of the frequency of the pulse, are the
effects of the abstraction of heat from the body.
Cold is for heat is an entity - it is a something,
it is matter, and it is a cause a stimulus.
~~as well might we say that~~ Suppose I were
~~to tell you that I had touched~~ to darkness reduced the
frequency of the pulse & strokes in a minute,
would you believe me? - as you could not,
the pulse is reduced only by the absence of the
~~stimulus of~~ light - for darkness is a nonentity -
& a nothing. Light is an entity - a something -
it is matter - it is
a stimulus. ~~Suppose I were to produce a chemical~~
~~Anesthesia of cold and darkness and~~
In accounting for the pain inflammation
blisters and mortification produced by the absence of heat
among other causes of these the theory of the chemists
is of that the extreme cold abstracted
heat so

copiously & forcibly ~~as to Abstract heat from~~
to the parts deprived of it
the body, and thus to produce the effects of fire
upon the frozen parts. In this theory I will
I am aware of its difficulties. I will now
Heat a component part of the body spent to its organs.
offer a & a nother. Heat when in excess kills
the parts to which it applies. The effects of
this death on those parts — as are redness — a livid color
from living parts
Sesions. Serum ~~of Serum~~ in the form of
The Absence of heat
blisters. ~~Cold~~ in excess in like manner kills
followed by the torpor or Death of
the parts to which it is applied, and hence
the redness, livid color and blisters which follow
it from the Action of living parts upon it, for
Life & Death of ~~every part of the~~
we see the same thing from the death of
parts of the body from all other causes. There
is a Unity in their Operation. We see it
organizon
in malignant fevers — the petechia — blisters,
upon the Skin are the effects of the Death or
mortification of the Skin. We see it in a com
-plete
grown blister. It is the effect of the Skin separated by
Death from the Cutis by the Spanish Flies — hence
we find redness in the cutis when the blisters rise.
The redness shews only when the Stimulus of the

blister is not strong enough to ~~kill the integuments~~
Destroy the life of the cutis below the cuticle.
It occurs likewise after the blister has been
Draped two or three times. It is inflamm:
and it is necessary to the renewal of the
Cuticle. Mustard plasters seldom blister
because they are too painful to be borne
long enough to kill the parts to which
they are applied. ——

~~V That the Causes operating~~ Sources of

V I have only to add to this part of our Subject, that the medium heat of a Country may be known by the temperature of the water under Ground. Thus in Lat: 40° it is from 30° to 65° and is 52, and more or less in in different Latitudes and Situations. —

VI I shall first mention the Circumstances which Cause this morbid effects upon the Body, and afterwards such as encrease them.

to the influence of the Vernal Sun in
propagating his Species, & man sinks for
a while to a level with the lowest part of
the animal Creation. Fish feel its
influence more than any other Animals.
11. Under the positive effects of heat I shall only add
that it opens the density of the Solids of the
body, hence a European when weighed
under equal circumstances of height &
bulk with a Chinese or a Hindoo is
always considerably heavier. Even the
bones of a person who has lived & died in
a warm Climate are specifically lighter
than the bones of a person who has lived
and died in a cold Country. V

Let us next inquire into the

Relative effects of heat V

V Sir John Pringle tells us that the Summer
but that the
of 1742 in Germany was hot, - & ~~healthy~~
British Army was very healthy
and continued so Until the coolness of the
Nights, ~~and~~ and Sleeping in wet Cloaths
After the battle of Dettingen produced Sickness
~~and~~ ~~Fevers~~ in it. He tells us further - that
Fevers are most disposed to, upon a continued form in dry
weather.
Take notice here, the Absence of
V ~~In this remark there are two things~~
I
~~Intirely exceptions, but it is I believe only~~
~~when the~~ rain alone does not constitute
a Dry Summer, for there may be great
moisture in the Air from moist Winds, &
this Disposes to Sickness, though in a less
~~The wind from Land flows~~
degree than rain.
of heat
~~while I thus consider~~
~~the morbid effects as obviated by a dry air,~~

p. go: to p: 18 X

Numerous & Diffusive as the diseases are
~~from positive heat~~ which have been enumerated, ~~or~~ ~~they~~
from positive heat, they are very much
limited & when that heat is uniform & Dry.
in this
The most healthy Summers I have known.
city was, that have been ~~those~~ in which a Dry and
equable heat ~~was~~ prevailed during the
whole of that Season of the year. The
Summer of the year 1766 in Rome
is the Transactions of the Royal Society,
was uncommonly & uniformly dry & warm.
and yet adds the ~~person who~~ writer, the
city was uncommonly healthy: and all
our hospitals were nearly empty!" "
=1 2 The morbid effects of ~~positive~~ heat are
~~much influenced~~ ~~greatly limited~~ by time and habit.
These produce at last a great degree of
insensibility not only to itself, but even

go to — p: 19 A

V I must add that an air totally devoid of
moisture is scarcely fit for respiration.
Travellers thro the deserts of Nubia and
Arabia are obliged to inhale a little mois=
=ture from a Sponge in order to relieve a
difficulty of breathing induced by the ex=
=treme Dryness of the air. The heat of a
close Stove room produces the same effect,
And it is only to be removed by promoting
the evaporation of water by placing it in
a bowl or a plate upon the stove. There
is perhaps no such thing as air perfectly
Dry in any part of the World. M.r Shaw in
his travels into Syria says he found Salt
of Tartar to dilaquesce in the hottest &
Dryest parts of the Countries he visited. It
It has been remarked that the diseases when they
occur in warm & Dry weather are less violent &
malignant than those which occur in hot
& wet weather. D.r Clark says they are

[two leaves]

X The Winds from the South & S: West are
sometimes so moist that Doors Shut, and
Open with Difficulty during their prevalence.
The moisture of these winds is so well
established, that there is a Silver Smith in
Philad[a] who can tell in his work Shop when
they prevail from his tools losing their polish.
— While I thus consider the morbid effects of
heat as obviated by a dry Air V

V ~~to~~ greatest when the heat has been, not only protracted, but very intense. Acerbi tells us, that in travelling through Swedish Finland he often saw persons come suddenly out of a Vapor bath heated to nearly 200°. and stand half an hour almost naked in the open air, when the ground was covered with snow, and when the mercury was below 0, without feeling the least inconvenience from the Cold. The Russians after being exposed to their Vapor baths roll themselves in snow immediately afterwards with the same exemption from disease. - Baron Humboldt informs me

It is worthy of notice that the body suffers much less in passing from extreme heat to Cold than from extreme Cold to heat, all other circumstances being equal) that the men (300 in number) who work in a mine near Mexico 1900 feet

A to Cold. Hence we for Observe the Westindians
bear our Winters for one or two years, better
than our Natives. It is commonly said
they require three Winters to cool them
After being exposed for many years to a
verticle Sun. This insensibility to cold is still
3 The motion of winds and very much to Respect the
toodiness of heat to produce diseases provid
they come from a Dry & healthy Coun=
=try. They act by carrying off the heated
air from the body, and which by stagna=
=tion becomes impregnated with the
perspiration. Sailors in long Voyages
in hot latitudes,
become sickly in a Calm, Perhaps the
air in this case I shall say hereafter probably
undergoes a Decomposi=
=tion, and thus becomes a source of Disease
as well as by retaining the perspiration.

⊙ generally ~~mild~~ Diarrhœas, Coleras Colics &
Hepatitis of a mild nature. Dr Hillary says
the fevers of Barbadoes are always inflam.d in
a Hot & Dry Season. Dr Dalzelle says the
same thing of the fevers of St Domingo. The
yellow fever of Philad.a in 1793 was more ob=
=viously inflam.d: than ~~any~~ most of the fevers
which have succeeded it from its being ac=
=companied with such uniform hot &
Dry Weather. return to p - =114

= = below the Surface of the earth in which
the Heat of the air is from 100° to 202°: come
ent of the mine in the morning Up as do the
night in an Air in which the mercury
fluctuates between 40 & 50, without taking
Cold, or being unpleasantly affected by it.
From these facts it is plain the body suffers
much less in passing from extreme heat to
Cold, than from extreme Cold to heat, all
Other Circumstances being equal. —
But a further instance of the

by ~~Cont~~ motion lessens the morbid effects of heat. This is taken notice of by Sir Robert Wilson. It acts by promoting perspiration, by the evaporation of which from the body, there is some diminution of heat.

5 That state of the body which I called ~~Irritum~~ irritum and which follows the op of the different predispositions to disease from the expenditure of excitability, obviates in a certain Degree the morbid effects of heat. Hence the great advantage of visiting a warm climate in many chronic ~~Diseases~~ Disorders. It cures in chronic debility. The heat here restores the excitability, or renders its absence

relative effects of heat as influenced by time & habit appears in its exciting sensible in the fingers when they are thrust into hot water, and vanquishing the sense of touch when it acts for a long time upon the body.

It is from the ~~effects of heat~~ habitual effects of heat ~~being~~ ~~return to p: 19. 3~~ that the Creoles escape the yellow fever of the West Indies which proves so fatal to Europeans & Americans. return to p: 19. 3.—

V ~~This~~ The ~~ancient Romans~~ citizens of Ancient Rome, ~~and the men~~ migrated to naples, and the wealthy inhabitants of Portugal often migrate to the Brasils for this purpose in the evening of life.

less ~~noxious~~ hurtful to health & life. It is from
this cause that people in the Decline of
life, suffer less than middle aged people
in warm weather & in hot climates.
Indeed ~~both~~ health & longevity are often
obtained by ~~persons~~ persons migrating
from a cold, or even a temperate cli-
=mate to one that is uniformly warm
after they have passed the acme of life.
& Abstinence, or a Diet consisting wholly
of vegetables with no other drink than
water lessens the morbid effects of heat upon
the body. The Brahmins we are told in
India under the burning Sun of India,
always have cool hands. ~~Sir Robert~~
~~White~~ ~~Wilson remarks~~ The natives of the hotter
climates of Africa have their sultry

~~Of Hæmatemesis~~ according ~~to~~ ~~The~~ it is ap-
-plied to the whole, or a part of the body.
It is most apt to ~~in~~ produce Disease
in the latter way. I once saw a violent
muscular Rheumatism ~~induced~~ in a
young Lady by sitting for some time with
her back to the fire. and I attended in
~~was called~~ Decem^r 21.
1808 ~~attending~~ a man in Hæmoptysis
brought on by sitting & working all day
with his back to a hot Stove. D^r Darwin
cautions against sitting constantly with
the same side to the fire. ~~but it should~~ I can
easily conceive it may dispose to palsy or
Other Diseases. —

climates by living chiefly upon the
Spontaneous fruits of the earth. ~~Even~~
~~the act of~~ Sir Robert Wilson remarks
that the British Soldiers in Egypt bore the
heat of that Country best when they
abstained longest from eating, or partook
sparingly of Aliment. This practice by
lessening stimulus, spread the cause of heat.
Heat acts differently upon ~~the~~ different
ranks ~~and occupations~~ and professions of men. The wealthy
who ~~can afford a shelter from it,~~ are not obliged to work and who
prospect the means of mitigating it
by deep, cooling liquors, and shade suffer
but little from it. V

~~Let us~~ We come now to inquire into the ~~Causes~~ morbid
~~=tances~~ causes which increase the morbid effects
of heat upon the body. — They are

1 Previous exposure to Cold. I one hour
17° of heat on the 17th of March 1791

[Where you see Cold succeeding great heat, to produce greater morbid effects than great heat succeeding Cold]

It Of this there are many proofs in the words of medicine. Dr Sydenham says the sooner the winter sets in, and of Consequence the more protracted the Cold, the more malignant were the fevers particularly the first part of the winter & the succeeding Spring. It has been = p 25

produce universal debility ~~&~~ & Depression
in the Citizens of Philadelphia. The same
degree of heat would have been grateful and
gently stimulating in the months of
July and August. Pneumonies, Anginas
& Rheumatisms seldom fail to follow the
even moderate heat when it has been
preceded by Cold — hence the frequency of
those Diseases in the Spring and in open
winters. The old saying that a green
Christmas, that is a Chrismas in which the
ground is covered with Verdure, makes
a fat Church yard in the Spring is certainly well foun-
-ded. I have several times observed it in
this City. The morbid effects of heat will
always be proportioned to the intensity & Duration
of
Cold. ~~The it has continued, hence it has been so intense & durable~~

≠ where it does not produce mortification. it excites great pain. This has often been observed in Children who ~~rush~~ apply their hands to the fire immediately after coming out of the cold Air.

V Pringle has remarked that the fevers from the former cause are of a tertian type, — but from the latter — he says, viz exhalations, they are Quotidians or double tertians. Dr Clark Head further that fevers are most apt to remit in moist weather. says the latter are of a more violent nature.

V3 That is ~~not~~ rendered more delitiating when it is applied to the body in the form of Wind. This wind which is called Syrocco is very common at Aleppo, and in some parts of Italy. It is sometimes heated to 112° by passing over immense beds of Sand. Mr. Bruce describes the effects of it at Naples, and speaks with great pity & contempt of an effeminate Italian Marquis whom he met in a morning walk supporting himself under the pressure of this Air by a Smelling bottle.

= been observed that the fevers which succeed the cold winters in London & Russia are generally of a low & malignant nature. The system from the long prostration of its excitability & thus parts with the cold loses its power to react or to be roused upon so as to be raised to open inflammatory excitement. The effects of the sudden application of great heat to a frozen limb have often been noticed. It destroys the life in the part & induces Mortification in the part affected.

2 Moisture combined with heat increases its morbid effects upon the Body. It does this in three ways. 1 By preventing the escape of heat from the body. Dr Fordyce found the heat of the human body in which he made his experiments, to be greatest when it was combined with moisture. 2 By generating cold when this moisture is applied to the body. A wet Sheet, or great Coat, and even a wet pair of Stockings Dr Dewar says often brought on the Diarrhoea & Complaints in the Soldiers of the British army in Egypt in 1801 by the cold produced by its evaporation. It was remarkable the small degree of cold thus produced, more certainly induced Diarrhoea than a greater degree of it, probably from the System not reacting in the former case. 3 By retaining the putrid exhalations that produce fevers longer in the atmosphere, and thereby exposing the body to a greater quantity of them. Fevers from the 1st & 2nd Causes are generally of a tertian type and from the 3rd Cause of a quotidian, double tertian type according to Sir Jno Pringle. The last moreover are more violent, than the fevers from simple moisture.

V

by The morbid effects of heat are encreased by being accompanied with a dry air. This is noticed by Sydenham, Hillary, & latterly by Dr Wm Irvine in his Account of the diseases of Sicilly. The dickens in this produced by this Union of great heat & dry air are always inflammatory. This was very strikingly illustrated in the yellow fever of 1793 in this city. Fevers in hot & dry weather in Sicily & Spain are generally of a continued

V even in those cases two in which heat is combined with moisture, and emanata from exhalations.

4
Heat is rendered more certainly a remote
an exciting
or predisposing Cause of Disease from its
acting upon bodies previously impreg=
=nated with ~~putrid exhalations~~ miasmata
from putrefying vegetable & animal
matters. Hence it is most hurtful in
July & August
in the Continental Countries.

5
The morbid effects of heat are
increased by its being alternated with great
cold. Such is the influence of habit that
the long continued action of heat upon
the body defends it from many of the
Diseases which are produced by its early
& transient applications; But when it is
removed by Cold, this habit is destroyed,
as in the winter,
and every Summer brings with it a
new or fresh Stimulus to the body. This

V^th. The absence of Wind disposes heat to
be more productive of disease. Hippocrates
mentions the Season which is "sine Aura"
as a Sickly One. Calms at Sea when of long
Continuance generally produce Sickness in hot
weather. This was remarked in the first Ships
that engaged in the East India trade from
England in the year 1603, particularly in
a Vessel Commanded by a Capt: Lancaster
It has since been taken notice of by Dr. Clark
in his treatise upon the Diseases of East
India Voyages. I have never heard of but one
exception to this remark. ~~Mr. Bolt I have~~ Baron
Bolt informed me that in an extensive
Country inhabited by several tribes of Indians
at the Head Waters of the Oronique & Black rivers
in South America, no leaf had ever been
seen to be moved by a breath of Wind. The
Indians have not in their Language
a word to express Wind, and yet they

turn over to 7.

explains the reason why the ~~West Indians~~ Creoles &
the old settlers in the West Indies escape
the yellow fever, and why the natives of
the middle States in which the extremes
of heat & cold prevail, are ~~affected~~ subject to
it every year.

The ~~morbid~~ effects of heat are felt in
a peculiar manner by ~~in~~ very old
people & by young children. I have
often observed ~~a profuse heat in~~ the extreme heat of
Summer to prove fatal to old people.
It is most so when the nights are
unusually warm. The predisposition
of Children to be affected by great heat
is obvious from this being generally
the first sufferers from it in the Summer
either in its simple or compound
state,
months in the middle States of America.
body
all the effects of heat upon the

are not more likely than persons in
equal circumstances (the absence of winds
excepted) in other parts of South America.
The same degrees of heat are when the
~~Heat is~~ more hurtful ~~when the body is~~
heat of the body is elevated beyond its ordinary tem=
perature by disease than in ordinary health.
they are
~~Thus a heat at 90° will be more distressing~~
~~to~~ to

in his Epidemicks
And Dr Winstringham says that the
most healthy in England when uniform
and of long continuance
is not very healthy.

are varied by ~~their~~ its grades. The effects
of moisture or Dryness when combined with
heat are different according to the tempe=
=rature of the air. When ~~it~~ is cool &
moisture
=dry ~~they~~ relieve the heat of the body, it
seldom does any harm. Dr Hunter says
rainy
the wet seasons in Jamaica are not
unhealthy when the inhabitants are
not exposed to sudden vicissitudes.
A moist and temperate air has a
peculiar effect upon the skin. It
imparts to it that beautiful white &
red, which forms what is called a
fine complexion. The fine complexion
of the inhabitants of Great Britain & Ireland
derived chiefly from the moisture &
moderate heats of those Countries. ~~The~~
Rarity & Density of the air both produce different
effects according as they are more combined with heat & cold
moisture & Dryness.

V remark / that warm climates &
Countries are not nec[e]ssarily unhealthy;
on the contrary, that they are far more
favourable to health and life than middle
and temperate latitudes. This has been
clearly proved by General Berthier, report
to the french Government, of the ~~health~~ State
of the french Army in Egypt during the
late Campaigns in that Country with respect to health and life.
Europe he says the number of effective
men is as 1 to 12 in peace & war; In
Egypt in the months of Octob & Novem^r
they were as 1 to 28 and in Dec^m
Dec^m as one to 23. In Europe he adds
further, the deaths in the military hospitals
were as 1 to 43 in Octob & Novem^r and
as 1 to 37 in Nov^r and Dec^m. If
such be the State of Sickness & mortality
among Europeans, how much less may
we not suppose it to be among the

Upon answering the enquiries would
of heat
effects upon the human body, we are led
to inquire ~~why the Deities of Nature has been~~
why a warm country was chosen
~~for human why a warm country was chosen~~
~~for the birth place of the populate learning of the~~
for the birth place of the
climate, ~~and why human nature has~~
~~father~~ parents of the human race and why human
~~regulated~~ has been
in cold Climates. It was ~~in~~ beneath
the enervating Sun of Egypt that the Arts
and Sciences were first cultivated. The
ingenious Greeks lived in a warm Country;
and ~~the Deities~~ a country
in which heat greatly predominated over
Cold was chosen for the residence of that
favored
nation through which the will of and
knowledge of the Supreme Being was
communicated to man. To account
V.
~~these~~ for these facts, it is will be necessary to

Natives of that hot Country? Let us cease
then to wonder that ~~a hot~~ swarms cli-
=mates were chosen for all the purposes
that have been mentioned. They come re-
=plete with blessings from the hands of the
Creator, and they become unhealthy only
from the indolence, ignorance & prejudices
of Man in permitting filth to stagnate
~~with water~~ in their cities and Country.
places. Plagues, Dysenteries and Opthalmies
are kindly sent in Order to punish the
vices which permits them the existence
~~or~~ according to a ~~Spanish proverb~~ lying
occupied ~~only~~ by ~~Englishmen~~ & Dogs.
of these diseases. nor is it in this in-
=stance only that Heaven punishes
the want of Cleanliness. we see it in
the Vermin, and in the instinctive
Abhorrence which follow the want of
cleanliness in dress and person, in all
the civilized parts of the world, Let it
remembred 2ly that // p: 90

~~Observation~~ Mankind are endowed with reason, and made capable of profiting by experience, and that where both are render a proper direction, they can can obviate all the evils of ~~the~~ a warm climate that have been mentioned. This has been done in part by the natives of Africa, ~~and is generally healthy~~, and it was done by ~~the local~~ the aborigines of the West India Islands. Even in European Countries where men live agreeably to reason, they defend themselves against the diseases of Summer by diet - Drinks - shelter, & Cleanliness & apparel & manner of sleeping & accommodated to the heat of the weather. This is remarkably the case in Spain.

~~In Summer~~ The Streets of Madrid at midday ~~in Summer~~ or according to a Spanish proverb occupied only by Englishmen & Dogs. ~~in hot day~~ are deserted & Houses are protected from the Sun by closed doors and Windows.

Part of this Day is passed in Sleep. The inha-
=bitants revive with the evening Air, &
open their doors and windows to receive
it, and the ^ forepart of the night is spent
in Domestic or Public Society. There may
be Other reasons why ~~the first Nations~~
warm Countries have been preferred by
the Author of Nature for the first nations
in the world. They favour population by
the facility with which subsistence is ob-
=tained. They render up labor unnecessary for
~~their Shelter & Clothing of Man, for Labor and Cloathing,~~
but
~~life dependeds~~ for the Subsistence of the Domestic Animals,
which administer to his wants & pleasures,
and hence they afford more time for the
& social
cultivation of the intellectual & moral fa-
=culties of his mind, and thereby afford
him more enjoyment here, and prepare

him for greater happiness hereafter.

We come now to enquire into the morbid effects of Cold upon the human body. And here as in speaking of heat I shall first mention its positive & then its relative effects.

Cold is a negative quality. It exists only from the Absence or Abstraction of heat. It acts upon the human body as a Seda-tive, that is by the abstraction of the stimulus of heat. I infer this from the debility, palsy & contraction of the skin, its action upon the System. Labourers & travellers in the winter season bear witness to the truth of this remark. 2ly I infer the weakness, slowness and Absence of pulse which are produced by it. The pulse of a Greenlander seldom beats more than 40 strokes in a Minute, and the pulses of all people are slower

V. 3 From the accumulation of excitab.y
by which is induced by cold when it is of a
sudden or transient nature. Now stimulants
we know always expend excitab.y or convert
it into excitement. Take notice - I say =
V Besides abstracting heat, it acts upon
the solids of the body as it acts upon
inanimate matter by contracting
their bulk. This is probably the effect
of the same cause in both kinds of
matter - viz: the abstraction of the
matter of heat.

= cold accumulates excitab.y only when
it is sudden & transient - when long
continued - as in Russia & Sweden, the excita=
=bility is expended, hence the origin of the
low fevers of those countries in the spring
of the year.

in winter than in summer. V. 2dly from the effects of ~~cold being so analogous to~~ in curing ~~high toned~~ diseases being so analogous to the effects of certain medicines which are universally admitted to be sedatives, viz. bleeding, purges and low diet. ~~The~~

I am aware that another Opinion has been ~~diffused~~ entertained concerning the operation of Cold, and that is believed After Dr Cullen & some other physicians to act as a stimulant upon the body. ~~Dr~~ As just ideas upon this Subject are of great application both in pathology & in the practice of physic, I shall briefly enumerate all the arguments that have been urged in favor of the stimulating power of Cold, and endeavour to refute them!

It has been said that when we are much

debilitated by heat in Summer, a sudden
change of the air to a cooler temperature
~~does~~ removes that debility. ~~Does~~ The cool
air is said in this case gently to stimulate
and thus to impart strength ~~to the body~~ to
the body. To explain this fact agreeably to
the principle I am defending, it will be nec-
-essary to recollect that one of the effects of the great degree
of heat is to produce depression. Let us
suppose ~~healthy~~ pleasant & vigorous
~~existing health to be~~ excitement
to be ~~at 98° and~~ produced by 75° or 80°
exist between
of heat by Farenheits Scale, - then let us suppose
the heat to be increased to 90°, or above
it, depression will immediately take place.
In this State of the System, if cool air be
applied to the body sufficient to abstract
ten or fifteen degrees of heat, the body will
immediately return to its healthy grade of

V Pain I said formerly depends upon
a tendency to a Disorganization or
a Solution of Continuity
from 3 Causes. 1 Distention. 2 Contraction
or Pressure
& 3 chemical Stimuli. Now the
pain from Cold is the effect of ~~one of the~~
following Causes ~~etc~~ or more ~~of~~ or perhaps
of all the following Causes. 1 =

excitement, in Consequence of which the depression will be removed, and the body
ful a sensation which has been ascribed erroneously
to a Stimulating power in the Cold.

I wish you to attend to the explanation
of the ~~imposed stimulating~~ which has
given of this fact, for it is a Key that
unlocks many of the Arcana of Disease,
and relieves us from many of the errors
of Dr Brown's practice in certain Diseases.
- It is thus by obstructing the Stimulus
of blood - bile and water - ~~and indigestible chyle~~
& oppression induced by
= ~~causes~~ the removes debility & depression -
them
in fevers - and Dropsies, and imparts Activity
and Strength to the System.

2 The pain which is induced by Cold (it is said)
~~is~~ proves its Stimulating power. ~~This~~
~~is said to~~ ~~one or other of the~~ or
~~pain depends upon a~~ ~~two causes, either~~

V from Cold may be induced by the ~~incapacitation~~ ~~of those organs directly from this~~ derangement in the regular ~~and~~ natural actions of the ~~this~~ parts which are the seats of pain but ~~can~~ from ~~which~~ is always ~~the~~ increased ~~or~~ by the Abstraction of heat, to a certain grade = The Abstraction of blood, and light, ~~of~~ of morbid excitament. = induce pain in the same indirect manner.

They leave the vessels in the state of a ship when the wind which impels it, sudden= =ly dies away. The Ship rolls from the loss of its tone, or the Equilibrium given to it by the impetus of the wind, and thus produces new arrangements in its Cargo. Irregular action in many blood vessels of ~~the body~~ and fibre of the body follows the with the same certainty ~~irregularity~~ the sud= =den Abstraction of such a portion of Stimulus as to destroy its tone. Blood letting from the ~~irregular god~~ and irregular actions it sometimes induces (according to the state of the disease in which it is used -) has been as improperly ~~common~~ called a Stimulus as Cold. = ~~In fevers~~ ~~and Hectic pains of Cold proving [illegible] but we~~ ~~observe [illegible] with Medicines [illegible]~~

= contraction &
~~first~~ closer Union of the solid parts
of the body by the Abstraction of their heat,
in Consequence of which the vessels are
unduly prest to as to limit pain.

I am aware that I formerly supposed forpure
to be one of the causes of animal heat. When
there is not heat emitted by the forpure or
Contraction of the muscles, as well as pain?
I answer, the same cause according to its degree
of force, often produces opposite & contrary effects.
Thus a moderate Stream of air or a few Sparks of fire inflame the skin, while
bellows upon a ~~fire coal~~ intense ~~fire~~ volcano & thus extinguishes them.
a violent Stream of air
or 2ly the pain from cold may be the effect of
a rapid afflux of heat (which always tends to
an equilibrium) to the cold part of the body
& thus produce the sensation in question. It is
as to induce the sensation of heat & cold ~~It~~ in their extremes of pain from
certain heat & cold ~~th~~ not only the same sensation, but the same
morbid effects. Thus by touching frozen Quicksilver
blisters
a burning part & inflammation are induced in
the fingers similar to what are induced by touching a
heated hot iron. ~~It~~ It is indeed it is supposed by in
the former case by the rapid afflux of heat from every
part of the body to the fingers. — Or 3ly Pain V

~~In~~ ~~Mortal excitement~~ ~~takes~~ ~~place~~ ~~in~~ ~~the~~ ~~system~~ ~~from~~ ~~cold~~
~~perfectly~~ ~~from~~ ~~the~~ ~~sudden~~ ~~instant~~ ~~of~~ ~~its~~ ~~recent~~ ~~influence~~ ~~in~~ ~~vita~~
~~by~~ ~~this~~ ~~circle~~ ~~being~~ ~~cold~~
It is no Objection to this Solution of the

cause of pain from cold, that the excite-
=ment of the part affected is reduced below
the grade of health. The excitement in
the blood vessels in a typhus fever is
below their natural & healthy excitement, &
yet disease and pain occur in
them. We are to Distinguish between
the indirect & primary effects of applications
to the body and such as are indirect, & se-
condary. Eg: a purge is a stimulant in
its first operation, but it produces debility
effects by evacuating the Contents of the bowels.
Thus Cold is sedative in its first operation
Its stimulating effects are secondary, and
accidental. Thus heat in its first operation
is Obtunded debilitating that is, when it induces Oppression
=does pain by reaction, but
& yet who will deny its being a stimulant?
Take no notice here of the pain from
Cold which precedes the application of heat
to the body. This is evidently the effect of
the stimulus of heat acting upon

2 pages

~~Affected~~ by cold and pain. ~~Either one of~~ Either of the
above causes is sufficient to account for
the pain which is produced by Cold, but
it is probable they both concur in a
greater or less degree. —

3 It has been said that Cold sometimes
induces a redness ~~excited~~ in the Skin and
an apparent enlargement of the Skin,
analogous to the same effects of heat
upon it. This is occasioned by such a
~~redness and~~ relaxation of the cutaneous
vessels from a partial Distruction of their
capacity of life ~~the~~ by the Cold, that the
blood rushes into them, and thus imparts
to the Skin a red color. A similar color
takes place in enlargement fevers & often
from the same state of the Capillary
vessels. That the explanation I have

= ~~Defo~~ parts previously amended highly
excitable by the Legislative Assembly of the
Ld. return to 3 - p 37.